Asset Pricing, Leverage, and the Bull Market of 2003 - 2007

A Practicum Presented to

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Masters of Science in Real Estate

by

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Introduction

The purpose of this analysis is to use market data and historical debt underwriting trends from reliable sources and observe how those underwriting trends affect the equity returns and the pricing of commercial real estate.

The Modigliani-Miller Proposition I Theorem states that in the absence of taxes, bankruptcy costs, and asymmetric information, in an efficient market the value of an investment is unaffected by how that investment is financed. In this scenario, all assets would trade at prices irrespective of their capital structure or amount of leverage. To illustrate this point, if one were investing in an asset on an all cash basis, and another investor were purchasing the same asset using leverage (defined as the use of debt), then the two would pay the same price assuming that when the first investor purchased the asset all-cash it could lever its position at the entity level at the same cost of capital that the second investor used to lever the asset. The theorem assumes that the cost of borrowing is the same when the collateral is real estate and when the collateral is an entity.

In reality, it is much easier for borrowers to acquire aggressive financing for real estate assets than for entities. Lenders view real estate as a tangible, stable, cash flowing asset with a low risk profile. The discrepancy in the cost of capital for the two options results in a discrepancy in pricing. Low cost debt has a tremendous impact on real estate pricing.

In the pricing of commercial real estate most investors determine value by using a discounted cash flow ("DCR") analysis in which a future stream of cash flows is projected and then discounted back at a specified discount rate to arrive at a net present value (NPV). In the formula below, n is equal to the number of periods, C is equal to the cash flows, t is equal to the period, and r is equal to the discount rate. Thus, the net present value is the cumulative present value of a several cash flows discounted by their respective number of years by the discount rate.

$$NPV = C_0 + \sum_{n=0}^{n} \frac{C_t}{(1+r)^t}$$

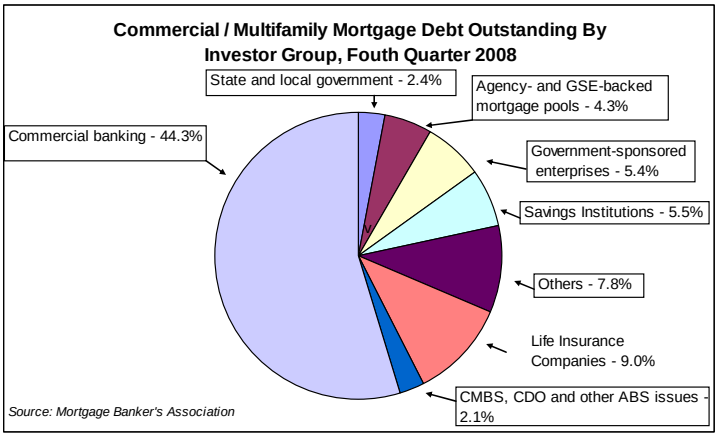
The discount rate that one uses is determined by the investor's cost of capital and the investor's return requirements. Investors seeking higher yields will discount future cash flows more heavily and arrive at a lower net present value than an investor seeking lower returns. The capitalization rate ("cap rate")

provides an indication of an asset's price. The cap rate is equal to an annual net operating income of an asset divided by the price, i.e. the higher the cap rate for an asset, the lower the price.

$$\text{Cap rate} = \frac{NOI}{sales\ price}$$

The cap rate is a pre-financing metric as it does not account for future cash flows or financing costs. Both cap rates and discount rates are used in real estate valuation because when projecting cash flows, investors usually make an exit or sale assumption at the end of the hold period and a cap rate is used on the last year's income to arrive at an exit price.

Most investors first seek a target return, which varies based on their investment criteria, i.e. stable core investors seek lower returns than risk-taking opportunity funds. This target return is the discount rate that investors use in the valuation of the assets they seek to acquire. The investor's return is achieved by balancing their cost of capital with the valuation of the asset they seek to acquire. The lower the cost of capital the more an investor can afford to pay for an asset while achieving a specific return. As long as there is a liquid debt market, as there was in the early to mid-2000s, investors are able to pay higher prices for real estate and still achieve target returns. When the liquidity spigot is turned off, however; and inexpensive debt is difficult to attain, most investment funds do not lower their targeted returns. One of the most active buyer types in the early to mid-2000s were investment funds. These funds operate by providing a specified target rate of return and an investment strategy. The investment period, or "life" of these funds varies, but most funds have a five to ten year horizon in which they must invest and later redeem the capital that they invested on behalf of their investors and return the specified rate of return. Because most investors do not change their return requirements due to rapid changes in liquidity, when the cost of capital increases the only way for investors to maintain their target return is to pay less for the assets they acquire.

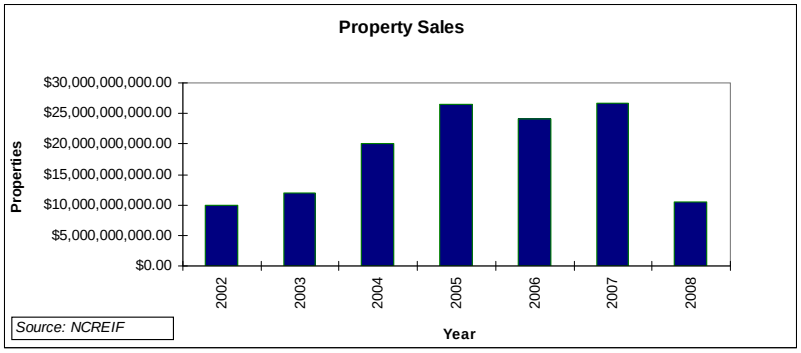


Methodology

This paper seeks to observe the rise and fall of inexpensive debt by observing the debt underwriting trends and volume of commercial real estate debt that was issued from 2003 to 2008. The author does not have access to sophisticated statistical software such as SAS, nor does the author have access to original loan documents or underwriting data for a pool of actual loans. Instead, this study observes the underwriting trends as they have been collected by the Trepp CMBS Deal Library. Because the Commercial Mortgage Backed Security (CMBS) legal structure requires detailed disclosures, the CMBS database provides a reliable and measurable stock of information that is not publically available though other commercial real estate lenders such as commercial banks, investment funds or life insurance companies. The Trepp CMBS Deal Library is the largest commercially available database of CMBS and contains comprehensive information and history on the deals, loans and properties within the global securitized commercial market.[7] The advantage of using a CMBS database is that it contains loan information for a large number of CMBS deals and syndicators as well as originators. Consequently, there is a broader representation of loans than typically found in commercial loan research using a single pool of data from a bank or a life insurance company. Of total commercial mortgages outstanding at year end 2008, the CMBS market constituted roughly 25%. For the aforementioned reasons, however; the CMBS underwriting data is available and assumed to be reliable and thus the results of the analysis below can be extrapolated to apply to the universe of commercial mortgages.

Investors speak of cap rates as a barometer for valuation in the real estate industry and there is much talk about the upward or downward movement in cap rates, but cap rates alone do not determine pricing. Cap rates are a byproduct of the cost of capital and the required returns of investors. Because investors are still seeking returns in a pre “credit crunch” world and inexpensive debt has been greatly reduced, it is projected that cap rates will increase dramatically in the next few years greatly reducing the price of commercial real estate in the United States. This decrease in price has tremendous implications for all involved in the real estate community including owners, brokers, special servicers, banks and the United States Federal Government.

Bull Market of 2003 to 2007



Year	Count Of Sale Price	Aggregate Sale Price	Ave Sale Price
2002	396	$9,886,981,761	$24,967,126
2003	419	$11,879,967,526	$28,353,144
2004	610	$20,077,767,012	$32,914,372
2005	774	$26,528,178,480	$34,274,132
2006	668	$24,142,315,255	$36,141,191
2007	616	$26,655,820,852	$43,272,436
2008	253	$10,465,008,208	$41,363,669

Commercial real estate has a unique status among investments on the risk/return spectrum. Unlike a security, real estate is a tangible asset that requires constant management. The cash flows generated from real estate are a combination of several factors including macro and micro market trends, management, and tenant quality. Beyond Buy/Sell options a manager has many ways to alter the Risk/Return characteristics of a single asset through leasing, renovation or budgeting. [8]

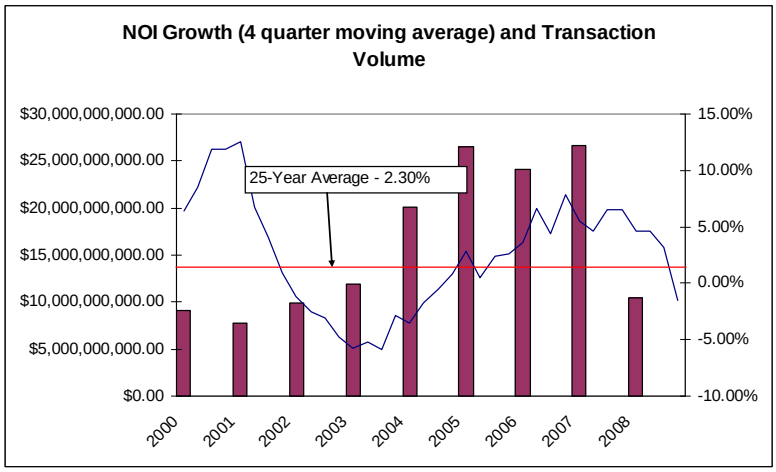
A handful of events in the early 2000's created a shift in thinking among lenders as it relates to commercial real estate. After the recession of the early 2000's, the accounting scandals of Enron and Worldcom and the bursting of the "dot com bubble" a large amount of both equity and debt was allocated to real estate, which was viewed as a safe and stable cash flowing asset class.

This tremendous inflow of capital into the commercial real estate market brought about a bull market that began in 2003 and peaked in 2007 and was characterized by record pricing, transaction volume and number of properties sold. Total commercial real estate transactions increased 224.4%, from $11.8 billion in 2003 to $26.7 billion in 2007.[5] During this same period the transaction volume by number of properties increased 147% from 419 to 616. Interestingly, the transaction volume by transaction price increased at a faster rate than the transaction volume by number of properties because the price of commercial real estate was increasing at a rapid pace as well. The average sale price increased 177%, from $24.4 million to $43.3 million.

The transaction and pricing boom that occurred during this period has been attributed to several factors including a "paradigm shift" in the way real estate is priced in terms of fund allocation and its role in Modern Portfolio Theory. It can be assumed that investors were also motivated by optimistic

assumptions about real estate fundamentals and net operating income growth. An observation of NCREIF; however, suggests that in 2003 the room for fundamentals growth was limited.

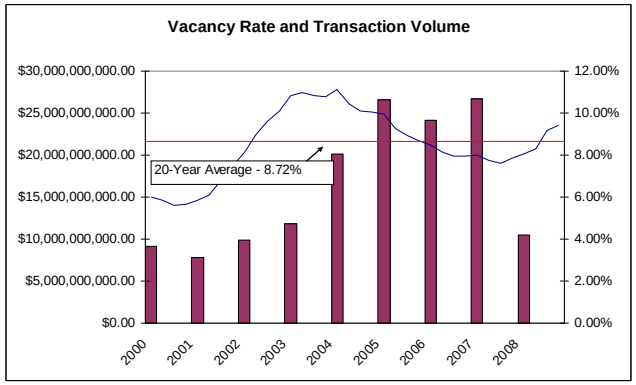
NOI Growth



In the first quarter of 2001 the 4 quarter moving average NOI growth rate was at 12.56%. The theory of mean reversion states that high and low periods of growth are temporary, and growth will tend to have an average rate over time. After a period of unsustainable double digit growth, NOI growth would have to shrink. By the first quarter of 2003, the 4 quarter moving average NOI growth rate had fallen from 12.56% in the first quarter of 2001 to -2.85%. Despite the declining NOI growth, transaction volume increased during this period by 53%. Investors entering the market during periods of negative NOI growth, from the first quarter of 2002 to the fourth quarter of 2003, would have had reason to expect NOI growth assuming NOI growth rates would mean revert to a 25-year average of 2.30%. Transaction volume increased by 203% between 2002 and 2004. By the first quarter of 2005, the 4 quarter moving average NOI growth rate was just above the 25-year average at 2.88%. Assuming that the NOI numbers had reverted to the mean, NOI growth would not be a primary motivation for investment. Any investment that in an environment of higher than average NOI growth would have to experience NOI loss. Transaction volume; however, grew an additional 33% between 2004 and 2007. NOI growth trends were not a major motivation for investing in commercial real estate during the early to mid-2000's.

Vacancy

In the first quarter of 2003, average vacancy rates were 10.84%, about 2.18% higher than the 25-year average of 8.66%. The vacancy rate had grown 5.22% from a low of 5.62% in the third quarter of 2000.

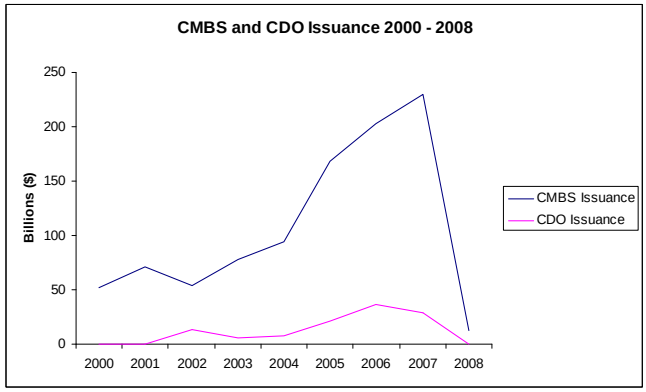


In 2003 both NOI growth and vacancy were off of the 25-year averages suggesting that a patient investor could enter the market and achieve growth by simply waiting for real estate fundamentals to mean revert. However, this alone was not enough motivation to spark the dramatic increase in transaction volume and the cap rate compression that occurred in the next five years.

The real motivation for the bull market of 2003 to 2008 was the availability of inexpensive debt. The inexpensive cost of debt allowed investors to pay record pricing while maintaining target leveraged returns. From a lender's perspective the bull market was characterized by a sharp increase in the amount of debt available as well as increasingly aggressive underwriting and leverage.

Securitization

The influx of capital to the real estate industry included both direct investment in real estate assets and securitization. Commercial Mortgage Backed Securities (CMBS) emerged in the mid 1980's amid a strong economy, deregulation of the financial services industry, and preferential tax treatments to commercial real estate.[1] With the real estate recession of the early 1990's the Resolution Trust Corporation (RTC), which was created by Congress to facilitate the bailout of the ailing thrift industry, was mandated by Congress to liquidate the assets it had acquired.[1] The RTC utilized the CMBS market as a conduit, issuing nearly $15 billion between 1991 and 1993. The subordination levels and perceived built-in diversification of securities appealed to many investors. With the success of the RTC's foray into the CMBS market,



insurance companies, pension funds and commercial banks used CMBS to liquidate balance sheet assets and reduce risk.

In a CMBS structure several commercial real estate loans are pooled into one collateral base and then issued as securities. Several different securities are created from the same pool of loans because the cash flows through a waterfall structure. In a waterfall structure, a series of tranches with different exposures to the risks of the underlying assets are issued. The cash-flow waterfall allocates the interest and principal payments of the underlying collateral pool of debt instruments to the tranches in order of seniority. For example, in a senior-subordinated structure, the senior CMBS debt tranches are paid first, and the mezzanine and lower-subordinated notes are paid second and third, respectively. As a result, the senior tranche has less payment risk and receives a higher rating from a rating agency. The mezzanine and lower-subordinated notes are paid last. If the collateral produces insufficient funds to pay all of the tranches, the losses are administered to the lower-subordinated notes first, then the mezzanine. These tranches are therefore more risky, have a lower credit rating and trade at higher yields. CMBS were favored by investors for their risk-mitigating characteristics including built-in diversification and overcollateralization. Overcollateralization is a process in which the total asset pool is larger than the total value of the securities issued. With overcollateralization the first losses are experienced by the issuer and the bondholders are not affected.

In 2003 an explosion in CMBS issuance was ignited by the creation of the Collateralized Debt Obligation (CDO).[2] CDOs, like CMBS, are structured financial products in which a collection of securities are held in a trust formed as a Special Purpose Vehicle (SPV) and sold to investors. CDOs operate in the same manner that CMBS operate but often include more risky collateral than traditional CMBS, including floating rate commercial real estate loans and construction loans. The beauty of the CDO from the lender's perspective was that the lower rated, less profitable tranches of several CMBS could be pooled into one CDO, and through the perceived reduced risk afforded by the inherent diversification, these CDOs were often given AAA or investment grade ratings by the rating agencies. The ability to convert lower rated bonds to AAA through the CDO structure allowed issuers sell more AAA rated assets using the same pool of collateral and played a significant role in the volume of commercial real estate loans that were issued through the CMBS structure. The worldwide appetite for securities backed by commercial mortgages was tremendous. Money market funds, pension funds, and many other investment funds purchase AAA-rated securities irrespective of the loan collateral. From their perspective, a AAA-rated security is a solid investment regardless of whether that collateral is composed of commercial paper, real estate or any other product type. From 2002 to 2006, issuance for commercial real estate CDOs increased

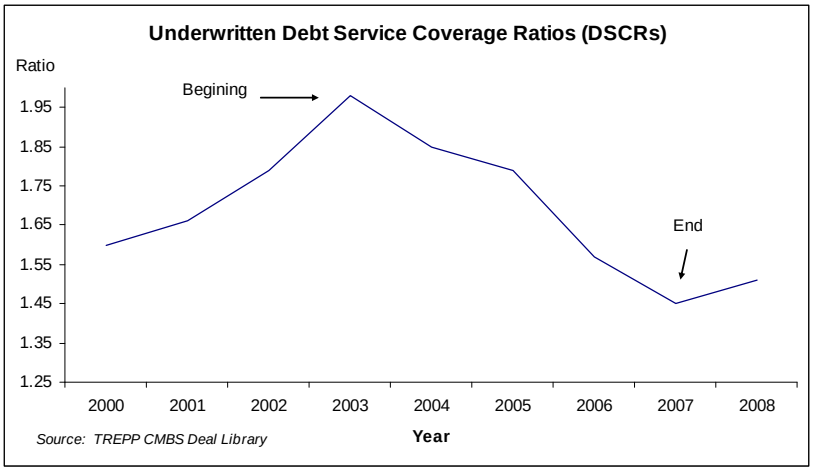
by 281% with a total of $36.6 billion in 2006.[9] The appetite for CDOs and other CMBS products required an increasing volume of commercial mortgages. Because the loans were securitized and sold off to investors, the originator of the loans had very little balance sheet exposure if the loans ever defaulted. This, combined with the need for large volumes of commercial loans, allowed CMBS issuers to relax underwriting standards.

CMBS Underwriting

An analysis of the underwriting of CMBS loans from the Trepp CMBS Deal Library from 2000 to 2008 illustrates how a purchaser could pay increasingly higher prices for the same real estate while achieving a standard target return. This phenomenon explains the record pricing and transaction volume that characterized the 2003 to 2007 bull market and provides valuable insight into the future pricing of commercial real estate.

Debt Service Coverage Ratio

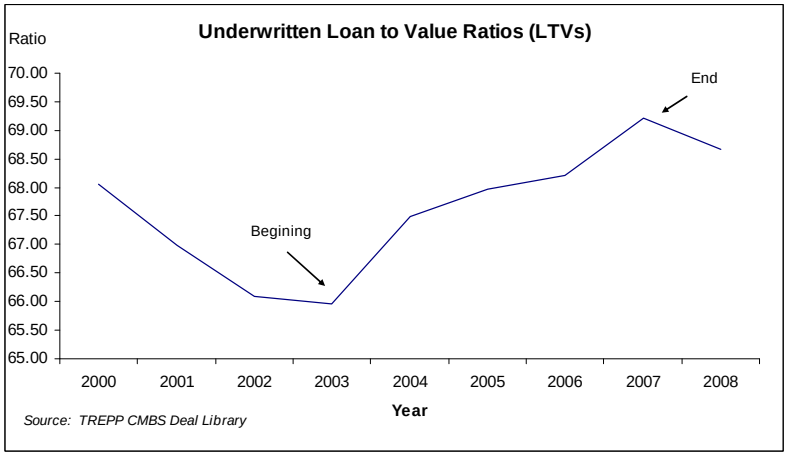
The Debt Service Coverage Ratio ("DSCR") is the basic income-based criterion for mortgage underwriting and is defined as the collateral property's annual net operating income (NOI) divided by the annual debt service required by the loan; thus DSCR = NOI/DS.[5] From 2000 to 2003, DSCR levels increased steadily from 1.60x to 1.98x, then reversed and decreased from 2003 to the low of only 1.45x at the "peak" of the market in 2007.



YEARS	2000	2001	2002	2003	2004	2005	2006	2007	2008
DSCR	1.60	1.66	1.79	1.98	1.85	1.79	1.57	1.45	1.51

LTV

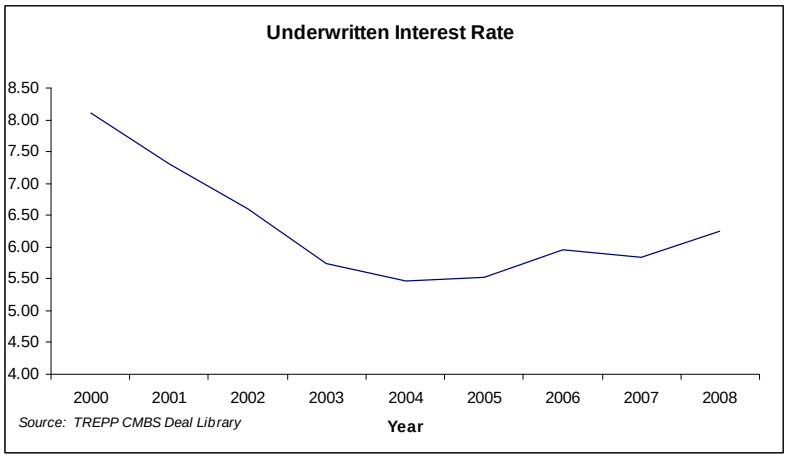
The Loan to Value Ratio ("LTV") is the basic asset-value-based underwriting criterion and is defined as the principal loan amount divided by the market value or purchase price of the property; thus LTV=L/V.[5] The LTV ratios decreased from 2000 (68.06%) to 2003 (65.97%) then increased substantially from 2003 to 2007, with CMBS LTV levels at 69.21% in 2007, the high for this period.



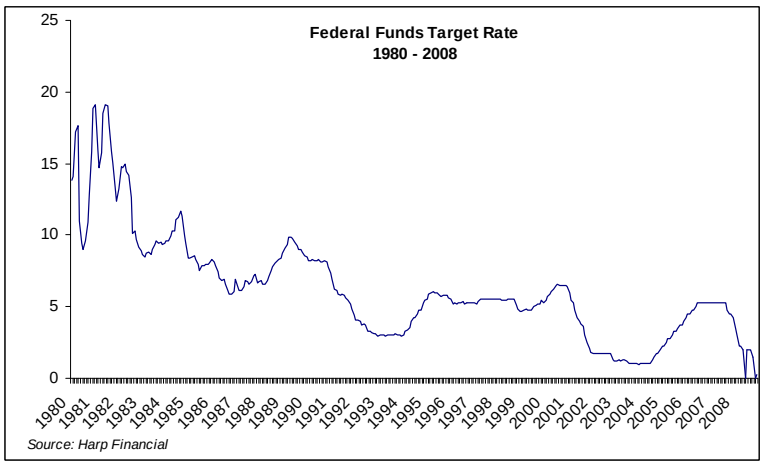
YEARS	2000	2001	2002	2003	2004	2005	2006	2007	2008
LTV	68.06	66.99	66.09	65.97	67.50	67.98	68.21	69.21	68.66

Interest Rate

The decrease in mortgage interest rates was supported by the Federal Reserve, which under the Chairmanship of Alan Greenspan reduced the Federal Funds Target Rate from 5.98% in January 2001 to 1.24% in January 2003. The Federal Funds rate is determined largely by the purchase and sale of U.S. Treasuries and federal agency securities, called open market operations. By purchasing large amounts of securities the Federal Reserve injects cash into the banking system and the overall economy. The Federal Funds Rate is the interest rate that depository



YEARS	2000	2001	2002	2003	2004	2005	2006	2007	2008
Rate %	8.10	7.31	6.60	5.75	5.46	5.53	5.96	5.83	6.25

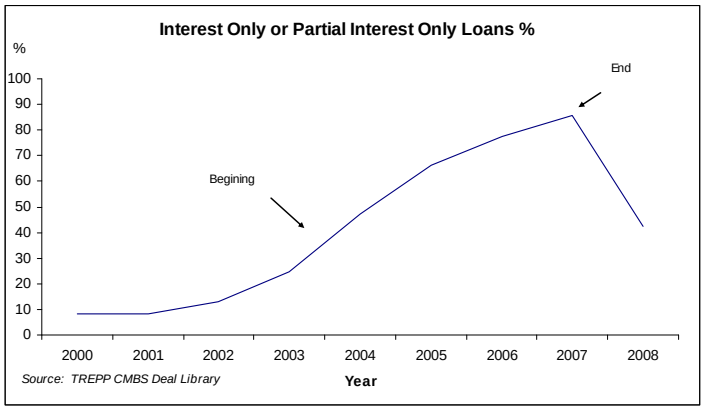


institutions lend overnight federal funds to other depository institutions. By changing the target Federal Funds Rate, the Federal Reserve can increase or decrease the supply of money to the economy. Lowering the Federal Funds, for example, encourages interbank lending and increases the amount of money in the economy. By lowering the Federal Funds rate between 2001 and 2003 the Federal Reserve greatly increased the capital base in the economy, which decreases the cost of capital and allowed lenders to offer mortgages with lower interest rates while still turning a profit.

Underwritten interest rates decreased from 2000 at 8.10% to 2004 at 5.46%, then climbed gradually through 2008 at 6.25%. Similar to the DSCR and LTV ratios, Interest Rates became more aggressive (declined) in the early part of the analysis period, however; unlike the DSCR and LTV, interest rate underwriting data moderated in 2004 and started to slightly increase through 2008. This suggests that at least one aspect of underwriting was trending in a more moderate manner. However, the change in interest rates is occluded by the emergence of the non-amortizing loan structure that was gaining popularity at the same time.

Amortization

The Interest Only ("IO") loan structure eliminates amortization from the debt service calculation. By eliminating the principal portion of the amortized payment, the annual debt service for the loan is greatly diminished allowing a borrower to use increased leverage without changing cash flow assumptions. The percentage of loans that included IO or partial IO structures increased from 8.30% of issuances to 24.60%, a nearly 296% fold increase. From 2003 to 2007 the percentage of IO loans increased to 85.60% of issuances, an additional 347% increase.



YEARS	2000	2001	2002	2003	2004	2005	2006	2007	2008
Interest Only %	8.30	8.30	13.10	24.60	47.20	66.20	77.40	85.60	42.30

Underwriting Conclusion

The cumulative effect of the above underwriting trends demonstrates that borrowers were able to acquire larger loans with lower rates and lower debt service which provided enhanced levered returns without changing the cash flow of the underlying asset. An analysis of the underwriting of CMBS loans from 2000 to 2008 illustrates how a purchaser could pay increasingly higher prices for the same real estate

while achieving a standard target return. In most cases the changes in underwriting occurred in 2003, in which underwriting became more aggressive, and in 2007, in which underwriting trends reversed direction. These two years can be viewed as the "Beginning" and the "End" of an overall trend in commercial mortgage underwriting that coincided with the record pricing and transaction volume that characterized the 2003 to 2007 bull market. Conclusions drawn from this data provides valuable insight into the future pricing of commercial real estate.

Analysis

Base Case Equity Underwriting	
Cap Rates	8.72%
NOI ($)	1,000,000
Value ($)	11,467,890

In this analysis the Trepp CMBS Deal Library was used to observe underwriting trends in CMBS loans and observe how changes in underwriting affect the cost of capital and the cap rates associated with a base case real estate transaction. This base case ("The Asset") is a representative cash flowing commercial real estate property that is not defined by property type or geographical location. It is simply created as a control used to analyze the effects of various leverage scenarios. In this analysis an NOI of $1,000,000 is used with a cap rate of 8.7% and a price of $11,467,890. The cap rate is equal to the 20-year average transaction cap rate from 1983-2002 from NCREIF. Keeping the cap rate, NOI and price steady, loan scenarios are then created for the Asset for years 2002 through 2008 based on the underwriting criteria provided by the Trepp CMBS Deal Library. The LTV and DSCR tests are first performed to determine the amount of proceeds, then interest rate and amortization assumptions are used to arrive at a debt service, which when subtracted from the NOI, yields the Cash Flow After Debt Service ("CFADS"). The Equity Return is defined as the CFADS / Equity Required. The analysis assumes that IO loan structures are only used in 2006 and 2007. Additionally, the amount of proceeds is determined by the lower of the LTV or the DSCR. For the purposes of this analysis the LTV ratio was used to determine the amount of proceeds in each scenario.

Equity Results

The Equity Return represents the cash-on-cash equity return for the first year only. It does not represent an internal rate of return ("IRR") because it does not account for future cash flows, but it does serve an illustrative purpose. The Equity Returns for the Asset increase 41.1% from the 2002 to 2007 scenarios then drop sharply after 2007 to a rate that is below the 2003 return. This example illustrates how leverage and low cost of capital dramatically increases and decreases the amount of returns to a borrower.

	2002	2003	2004	2005	2006	2007	2008
Debt Underwriting							
DSCR	1.79	1.98	1.85	1.79	1.57	1.45	1.51
LTV	66.09	65.97	67.50	67.98	68.21	69.21	68.66
Rate	6.60%	5.75%	5.46%	5.53%	5.96%	5.83%	6.25%
Amortization	Yes	Yes	Yes	Yes	IO	IO	Yes
Debt Constant	7.7%	7.0%	6.8%	6.8%	6.0%	5.8%	7.4%
Equity Underwriting							
Cap Rates	8.72%	8.72%	8.72%	8.72%	8.72%	8.72%	8.72%
NOI ($)	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Value ($)	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890
Pricing and Proceeds							
LT V Proceeds	7,579,128	7,565,367	7,740,826	7,795,872	7,822,248	7,936,927	7,873,853
DSCR Proceeds	7,289,484	7,212,046	7,968,599	8,172,225	10,686,958	11,829,420	8,963,147
Levered Equity Required	3,888,761	3,902,523	3,727,064	3,672,018	3,645,642	3,530,963	3,594,037
Debt Service	580,857	529,793	525,090	532,931	466,206	462,723	581,768
CFADS	419,143	470,207	474,910	467,069	533,794	537,277	418,232
DSCR	558,659	505,051	540,541	558,659	636,943	689,655	662,252
Equity Return	**10.78%**	**12.05%**	**12.74%**	**12.72%**	**14.64%**	**15.22%**	**11.64%**

This analysis would suggest that equity returns for real estate were more attractive in the later years. In reality, investors during this period were bidding for assets in a competitive market. Because investors often kept return requirements steady, the lower cost of capital allowed them to bid up the asking price of the assets while achieving the target return.

Assuming an investor is solving for the 2002 levered equity return of 10.78%, one can observe how leverage affects pricing and cap rates:

	2002	2003	2004	2005	2006	2007	2008
Debt Underwriting							
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Amortization	Yes	Yes	Yes	Yes	IO	IO	Yes
Debt Constant	7.7%	7.0%	6.8%	6.8%	6.0%	5.8%	7.4%
Equity Underwriting							
Cap Rates	8.72%	8.72%	8.72%	8.72%	8.72%	8.72%	8.72%
NOI ($)	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Value ($)	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890
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Debt Service	580,857	529,793	525,090	532,931	466,206	462,723	581,768
CFADS	419,143	470,207	474,910	467,069	533,794	537,277	418,232
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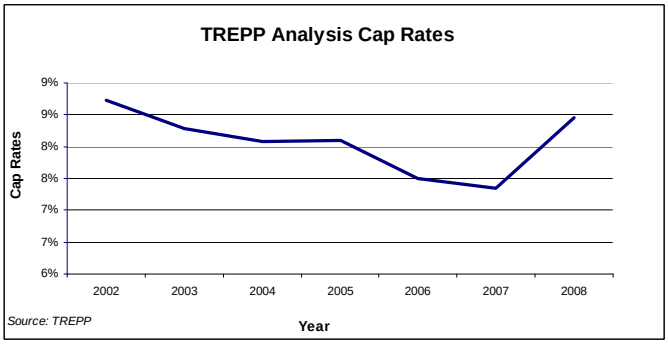
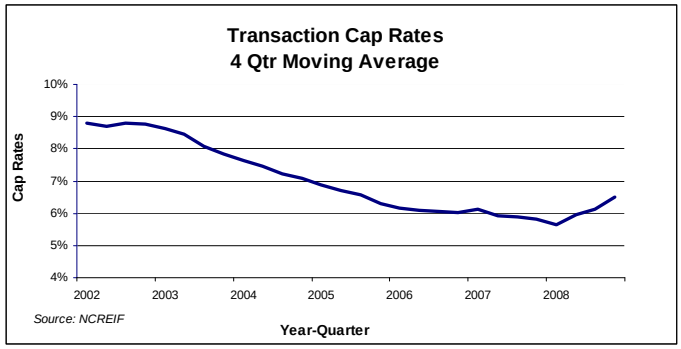
Equity Return	**10.78%**	**12.05%**	**12.74%**	**12.72%**	**14.64%**	**15.22%**	**11.64%**
Cap Rate Adjusment to Arrive at Target Equity Return	**8.72%**	**8.29%**	**8.08%**	**8.10%**	**7.49%**	**7.36%**	**8.45%**
Adjusted Value	**11,467,890**	**12,064,181**	**12,374,706**	**12,345,679**	**13,345,789**	**13,596,193**	**11,834,320**
% Change	0.0%	5.2%	7.9%	7.7%	16.4%	18.6%	3.2%

In the above analysis the cap rates for the asset were changed in years 2003 to 2008 to arrive at the same equity return as 2002. The impact on cap rates is significant with cap rates falling 136 basis points to a "peak" cap rate of 7.4% in 2007. The whole price increases from $11.5 million to $13.6 million, a 18.6% increase over 2002 pricing. Additionally, in 2008, when underwriting criteria tightens, the price must revert to pre-2003 levels.



2002	2003	2004	2005	2006	2007	2008
8.7%	8.3%	8.1%	8.1%	7.5%	7.4%	8.5%

The above analysis suggests that based on debt underwriting from 2002 to 2008, if valuation is derived from the cost of capital, then cap rates should have decreased through 2007, then increased in 2008. Actual data from NCREIF



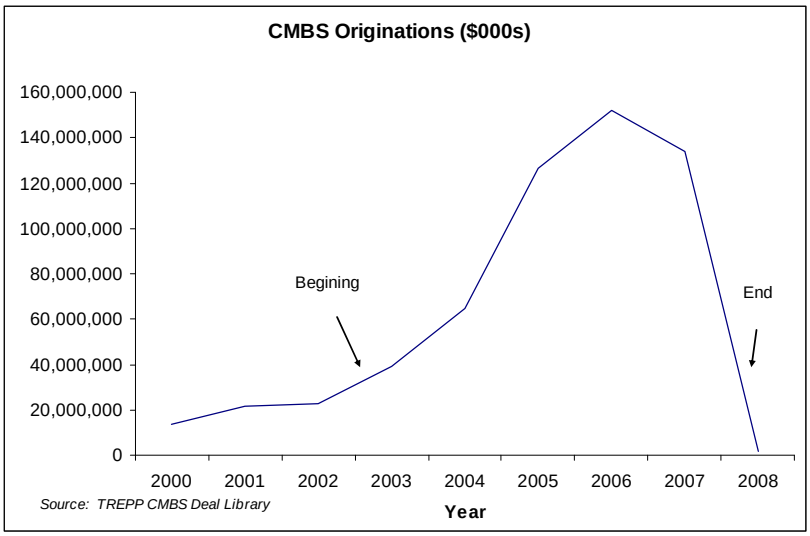
2002	2003	2004	2005	2006	2007	2008
8.8%	7.8%	7.1%	6.3%	6.0%	5.8%	6.5%

supports this thesis. According to NCREIF 4 Quarter Moving Average Cap Rates move in a similar manner to those of the analysis.

Contrary to the Modigliani-Miller Proposition I Theorem, which states that in an efficient market the value of an investment is unaffected by how that investment is financed, the Trepp Analysis suggests that pricing for commercial real estate (as evidenced by cap rates) is highly dependent on financing and the cost of capital. The theorem only holds true in absence of taxes, bankruptcy costs, and asymmetric information. Because this situation never occurs in reality, the theorem is designed to highlight the factors that cause discrepancy in pricing. The reason that results of the Trepp Analysis are contrary to the theorem is that lenders did not adequately price the risk associated with real estate. The Trepp Analysis indicates that during the 2003-2007 bull market, lenders assumed attributed too little risk to real estate and provided an abundance of mispriced, inexpensive debt.

Illiquidity

Within the context of today's "credit crisis," leveraged returns and cap rate compression have important implications for both borrowers and lenders. Based on the Trepp data, CMBS loan originations came to a screeching halt in 2008. Investor concerns about the quality of the underlying loans caused CMBS spreads to widen out to their highest spreads in history making it unprofitable to issue additional CMBS paper. Originations dropped from $134.1 billion to $1.4 billion. The "credit crisis" is in reality a "liquidity crisis." CMBS lenders were not the only lenders in the bull market of 2003 to 2007, but they did constitute about 45% of originations. Other lenders including Commercial Banks, Investment Funds and Life Insurance Companies have stopped lending at an equally rapid pace.



YEARS	2000	2001	2002	2003	2004	2005	2006	2007	2008
Current Bal (000s)	13,470,721	21,494,435	22,813,177	39,061,096	64,509,155	126,588,818	152,079,072	134,099,747	1,430,585

While inexpensive capital has evaporated, investor's required yields have not changed. If one continues the analysis and assumes a "Worst Case Scenario" for 2009 that there is zero available debt, the result is profound. Without a liquid debt market investors would look to purchase assets with all cash. Solving for a 10.78% equity return, on a $1,000,000 NOI, investors would use a 10.78% cap rate.

	2002	2003	2004	2005	2006	2007	2008	2009 No Debt
Debt Underwriting								
DSCR	1.79	1.98	1.85	1.79	1.57	1.45	1.51	0.00
LTV	66.09	65.97	67.50	67.98	68.21	69.21	68.66	0.00
Rate	6.60%	5.75%	5.46%	5.53%	5.96%	5.83%	6.25%	0.00%
Amortization	Yes	Yes	Yes	Yes	IO	IO	Yes	-
Debt Constant	7.7%	7.0%	6.8%	6.8%	6.0%	5.8%	7.4%	0.0%
Equity Underwriting								
Cap Rates	8.72%	8.72%	8.72%	8.72%	8.72%	8.72%	8.72%	10.78%
NOI ($)	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Value ($)	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890	9,276,438
Pricing and Proceeds								
LT V Proceeds	7,579,128	7,565,367	7,740,826	7,795,872	7,822,248	7,936,927	7,873,853	-
DSCR Proceeds	7,289,484	7,212,046	7,968,599	8,172,225	10,686,958	11,829,420	8,963,147	-
Levered Equity Required	3,888,761	3,902,523	3,727,064	3,672,018	3,645,642	3,530,963	3,594,037	9,276,438
Debt Service	580,857	529,793	525,090	532,931	466,206	462,723	581,768	-
CFADS	419,143	470,207	474,910	467,069	533,794	537,277	418,232	1,000,000
DSCR	558,659	505,051	540,541	558,659	636,943	689,655	662,252	
Equity Return	**10.78%**	**12.05%**	**12.74%**	**12.72%**	**14.64%**	**15.22%**	**11.64%**	**10.78%**
Cap Rate Adjusment to Arrive at Target Equity Return	**8.72%**	**8.29%**	**8.08%**	**8.10%**	**7.49%**	**7.36%**	**8.45%**	**10.78%**
Adjusted Value	**11,467,890**	**12,064,181**	**12,374,706**	**12,345,679**	**13,345,789**	**13,596,193**	**11,834,320**	**9,276,438**

The resulting price of $9.3 million is a 31.77% discount to the 2007 "peak" pricing of $13.7 million. Levered equity returns are affected more dramatically, with equity loss between 56% and 63% for all scenarios.

	2002	2003	2004	2005	2006	2007	2008
% Change to Current (Worst Case)	**-19.11%**	**-23.11%**	**-25.04%**	**-24.86%**	**-30.49%**	**-31.77%**	**-21.61%**
% EquityRequired (1 - LTV)	**33.91%**	**34.03%**	**32.50%**	**32.02%**	**31.79%**	**30.79%**	**31.34%**
Levered Equity Loss	**-56.35%**	**-56.15%**	**-58.80%**	**-59.68%**	**-60.11%**	**-62.06%**	**-60.97%**

From a borrower's perspective, a 60% loss of equity is a devastating return, but the lender is insulated from loss due to the low level of proceeds that were issued.

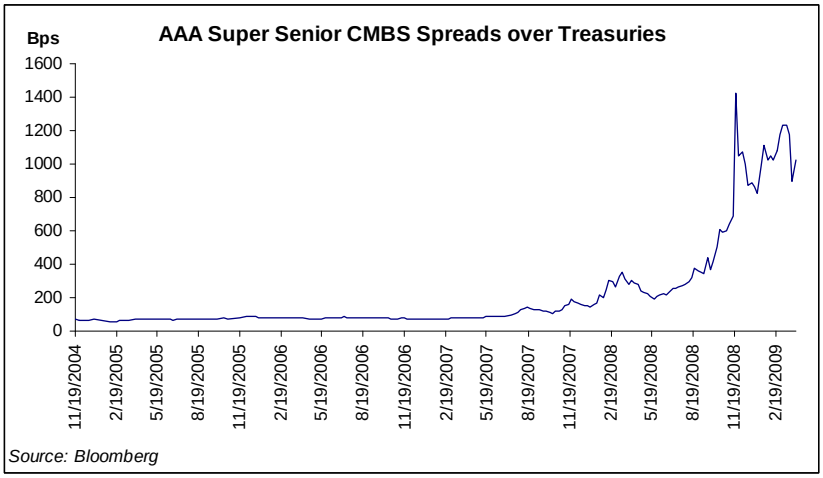
Up to this point the analysis has assumed that investors would be willing to invest in real estate on an all cash basis. From 2007 to 2009 the equity required to purchase the Asset increases 239% from $3.8 million to $9.3 million. Additionally, up to this point the analysis has assumed that equity return requirements have been stable at 10.72%. In the context of the "credit crunch," the current recession, and pricing indicated by the analysis above, it has become clear that commercial real estate as an asset class is

subject to wild swings in pricing and is therefore more risky. To assume more risk requires greater equity returns. So how will commercial real estate equity be priced going forward?

The recession has created tremendous uncertainty in commercial real estate underwriting. As companies contract, the demand for space will shrink putting downward pressure on occupancy and rental rates. How long the recession will last and how far it will drag down real estate fundamentals is a guessing game. Unlike stocks or bonds which trade in an open market and are priced continuously, real estate is an illiquid asset. It may take years for enough trades to occur before a "market" cap rate or yield is established. One way to estimate the future equity returns requirements for commercial real estate is to price the returns of other currently traded real estate related investments. The CMBS market can provide insight into the returns that investors now seek for real estate risk.

The AAA Super Senior bond is a subset of the AAA rated class and is senior to all other classes with respect to repayment and loss. The Super Senior bond is the least risky CMBS investment that an investor can purchase. Super Senior spreads began to widen in early 2008 and "blew out" in late September of 2008 after Lehman Brothers declared bankruptcy. As of April 3, 2009, AAA Super Senior CMBS spreads were trading at 1,021 basis points over the 10-year United States Treasury rates of 291 basis points. As of April 3, 2009, a CMBS investor is therefore expecting a 13.12% return for the least risky CMBS tranche, which is credit rated, and has the built in protection of diversification and overcollateralization. Additionally, CMBS represents an investment in mortgages which is the lowest risk portion of the capital stack in any real estate structure. Despite these cumulative risk mitigating characteristics, these bonds are trading at rates that are higher than the NCREIF 20-Year Average Cap Rate of 8.72%.

Investors have different motivations for investing in mortgage backed securities versus direct investment in real estate. Direct investors may be motivated by the potential "upside" of increasing cash flows through leasing, management or changes in the capital markets. A CMBS investor, on the other



hand may seek the risk mitigating factors previously discussed and the increased liquidity afforded by a publicly traded bond. For the purpose of the analysis, the Super Senior AAA CMBS spreads provide at least one real estate-related barometer with which to estimate expected equity returns. If an assumption is made that investors will now seek a 13.12% equity return, the resulting pricing in an illiquid market is dramatically lower.

	2002	2003	2004	2005	2006	2007	2008	2009 No Debt
Debt Underwriting								
DSCR	1.79	1.98	1.85	1.79	1.57	1.45	1.51	0.00
LTV	66.09	65.97	67.50	67.98	68.21	69.21	68.66	0.00
Rate	6.60%	5.75%	5.46%	5.53%	5.96%	5.83%	6.25%	0.00%
Amortization	Yes	Yes	Yes	Yes	IO	IO	Yes	-
Debt Constant	7.7%	7.0%	6.8%	6.8%	6.0%	5.8%	7.4%	0.0%
Equity Underwriting								
Cap Rates	8.72%	8.72%	8.72%	8.72%	8.72%	8.72%	8.72%	13.12%
NOI ($)	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Value ($)	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890	7,621,951
Pricing and Proceeds								
LT V Proceeds	7,579,128	7,565,367	7,740,826	7,795,872	7,822,248	7,936,927	7,873,853	-
DSCR Proceeds	7,289,484	7,212,046	7,968,599	8,172,225	10,686,958	11,829,420	8,963,147	-
Levered Equity Required	3,888,761	3,902,523	3,727,064	3,672,018	3,645,642	3,530,963	3,594,037	7,621,951
Debt Service	580,857	529,793	525,090	532,931	466,206	462,723	581,768	-
CFADS	419,143	470,207	474,910	467,069	533,794	537,277	418,232	1,000,000
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Equity Return	**10.78%**	**12.05%**	**12.74%**	**12.72%**	**14.64%**	**15.22%**	**11.64%**	**13.12%**
Cap Rate Adjusment to Arrive at Target Equity Return	**8.72%**	**8.29%**	**8.08%**	**8.10%**	**7.49%**	**7.36%**	**8.45%**	**13.12%**
Adjusted Value	**11,467,890**	**12,064,181**	**12,374,706**	**12,345,679**	**13,345,789**	**13,596,193**	**11,834,320**	**7,621,951**

In this scenario, an investor would be investing $7.6 million to acquire the Asset on an all-cash basis and would receive an equity return of 13.12%. When compared to the pricing scenarios for years 2002 through 2007, this pricing represents a 46.32% decline in asset pricing from "peak" 2007 pricing, a near complete elimination of all equity in all scenarios, and a moderate impairment to most of the underlying loans.

	2002	2003	2004	2005	2006	2007	2008
% Change to Current (Worst Case)	**-33.54%**	**-36.82%**	**-38.41%**	**-38.26%**	**-42.89%**	**-43.94%**	**-35.59%**
% EquityRequired (1 - LTV)	**33.91%**	**34.03%**	**32.50%**	**32.02%**	**31.79%**	**30.79%**	**31.34%**
Levered Equity Loss	**-98.90%**	**-98.55%**	**-103.19%**	**-104.74%**	**-105.49%**	**-108.92%**	**-107.01%**
Loan Impairment	**0.00%**	**0.00%**	**-1.54%**	**-2.23%**	**-2.56%**	**-3.97%**	**-3.20%**

Equity Loss

The implication for real estate owners is staggering. This analysis implies that any principal that purchased a commercial real estate property between the years of 2002 and 2007 would be effectively "wiped out" if they tried to sell the assets in today's environment. Given the record transaction volume that occurred in these years, the total value of real estate equity that has evaporated it substantial. If one takes the total transaction volume that occurred from 2002 to 2008 and applies a Trepp LTV Ratios for

the same period one arrives at an implied equity investment. The total equity investment for the period of 2002 to 2008 is north of $583 billion.

Year	Real Capital Analytics Transaction Volume	Trepp LTV Ratios	Equity
2002	$102,287,600,747	66.1%	$102,287,600,747
2003	$122,537,988,009	66.0%	$41,699,677,319
2004	$204,551,974,706	67.5%	$66,479,391,779
2005	$281,256,419,747	68.0%	$90,058,305,603
2006	$330,038,484,941	68.2%	$104,919,234,363
2007	$440,490,820,035	69.2%	$135,627,123,489
2008	$134,120,098,950	68.7%	$42,033,239,011
	$1,615,283,387,135		$583,104,572,312

Source: Real Capital Analytics / Trepp

This analysis assumes that each transaction was unique and that the same buildings were not traded within these years. In reality most buildings were traded or flipped several times within this period.

The greater implication of the analysis is that equity owners, regardless of who was left holding the asset have been wiped out due to a lack of liquidity and a change in pricing. This will create a sea change within the real estate industry as ownership transfers from traditional principals including opportunity funds, core funds, pension funds, developers and entrepreneurs, to holders of the debt such as banks, life companies and debt funds. There is the possibility that owners with negative equity will continue to manage the property and hold out for a change in the capital markets and a change in liquidity, but previous research suggests that negative equity is one of the primary motivations for foreclosure.

Several studies have been conducted on the events that trigger default. Two primary factors contribute to an event of default: decreased cash flow or an inability to serve the debt, and negative equity. In the first study on default risk assessment of commercial mortgages, Vandell (1984) hypothesizes that default could be due to the occurrence of either adverse cash flow or negative equity in the property.[3] Vandell's study recognizes both the interactions between cash flow and equity conditions in affecting default risk, and the need to consider the timing of default and to incorporate the time-varying information about the property, market, and economic conditions. Vandell later (1992) carried out an empirical study using aggregate commercial mortgage foreclosure experience and confirmed the equity theory of default.3 Essentially, when the market price of a property has fallen to such a degree that the borrower no longer has any possibility of recognizing a profit, the borrower defaults. Vandell, Barnes, Hartzell, Kraft and Wendt (1993) were the first to use loan-level commercial mortgage data from a large life-insurance company.[3] Empirical results confirm the dominance of loan terms and property pricing trends in affecting default.[3] A study by Chen (2004) found that borrowers are likely to make default decisions based upon both the equity position relative to the mortgage and the cash flow condition as indicated by the space market movement, indicating that negative equity and the ability to pay appear to co-exist in the default

process of commercial mortgages. Chen (2004) also found that real estate market variables, such as market-level vacancy rates, provide very useful information in explaining commercial mortgage defaults. In today's economic environment, vacancy and rental rates are already showing signs of decline. According to the CoStar National Office statistics, between the first and fourth quarter of 2008, vacancy rates increased from 11.30% to 12.00% while average asking rental rates decreased from $25.30 to $25.00. These trends are projected to continue in 2009.

Debt Loss

Equity holders are not the only groups affected by the change in pricing. Lenders in all categories are projected to experience loss of proceeds as well. By subtracting the 2009 price from the proceeds for each year and dividing the product by the 2009 price one arrives at a Loan Impairment Factor, which indicates the percentage loss that each loan scenario would encounter if the Asset for that year was marked to market.

$$\text{Loan Impairment Factor} = -\frac{\text{X Year Proceeds} - \text{2009 Price}}{\text{2009 Price}}$$

Taking that Loan Impairment Factor and applying it to the total CMBS Originations provides some indication of the magnitude of CMBS loss that would occur if the underlying assets were marked to market in an illiquid capital markets environment with equity requirements of 13.12%. Based on these assumptions the total CMBS loss for 2002 – 2008 originations would amount to nearly $13.1 billion dollars.

Loan Impairment	0.00%	0.00%	-1.54%	-2.23%	-2.56%	-3.97%	-3.20%
CMBS Originations ($000's)	22,813,177	39,061,096	64,509,155	126,588,818	152,079,072	134,099,747	1,430,585
Estimated Securitized Real Estate Val	0	0	-990,655	-2,824,106	-3,894,137	-5,321,722	-45,768
Total ($000's) 2002 - 2008	-13,076,389						

Assuming further that other classes of real estate lenders had similar underwriting practices through the analysis period, and knowing that CMBS lenders only contributed roughly 45% of originations during this period, one could make the very rough assumption that, if one were to mark all real estate debt to market the total loss would exceed $29 billion. This does not account for lost equity positions, bridge loans, or mezzanine debt. Again, the analysis assumes that each transaction is unique, when in reality many assets were traded multiple times, in which case the debt was paid off.

Scenario 2 – Limited Debt

Annual Origination Volume by Issuer Type 2005 - 2007 (%)			
	2005	2006	2007
Conduit	47.64%	45.71%	44.35%
Commercial bank & thrifts	20.16%	21.12%	21.37%
Life insurance company	12.97%	12.25%	9.64%
Other	6.94%	6.75%	8.96%
Fannie Mae	4.52%	3.96%	3.80%
REITs & Investment Funds	2.49%	2.61%	3.41%
Freddie Mac	2.60%	2.42%	3.02%
Specialty finance company	0.14%	1.80%	2.34%
Credit companies	0.00%	1.66%	2.08%
Pension Fund	1.56%	0.93%	0.55%
FHA/Ginnie Mae	0.97%	0.79%	0.49%

Source: MBA - Annual Origination Volume Summation 2005 - 2007

Annual Origination Volume by Issuer Type 2005 - 2007 (%)		
	Average Issuance (% of total)	2007 - 2008 Decline
Conduit	45.90%	98.00%
Commercial bank & thrifts	20.89%	86.00%
Life insurance company	11.62%	73.00%
	78.41%	91.10%

Source: MBA - Annual Origination Volume Summation 2005 - 2007

Assuming that there will be no debt available in 2009 may be too drastic although recent data indicates that available debt will be greatly constrained. Conduits (defined by the Mortgage Bankers Association as CMBS, collateralized debt obligations "CDO" and other asset-backed security "ABS" issuers) were the largest originators of commercial real estate debt from 2005 to 2007 constituting between 44% and 48% of total originations. According to the Mortgage Bankers Association's (MBA) Quarterly Survey of Commercial/Multifamily Mortgage Bankers Originations, Conduit originations for CMBS saw a decrease of 98% compared to the fourth quarter of 2007.[8] For the second largest originators of loans, commercial banks and thrifts, which originated 20% - 22% of real estate debt from 2005 to 2007, there was an 86% decrease in loans for commercial bank portfolios. For life insurance companies, which constituted 9% – 13% of all originations between 2005 and 2007, there was a 73% decrease in loan originations. Conduits Data before 2005 was not available to the author and 2008 data has not yet been released. Originations from the three largest lender groups, which constituted a combined 78% of total origination volume between 2005 and 2007 had declined by 91% by year end 2008. Dollar volume of loans for Government Sponsored Enterprises (or GSEs – Fannie Mae and Freddie Mac) saw a decrease of 16%. Lending has not vanished completely, but is has been severely constrained.

Returning to the Trepp Analysis, if a conservative assumption is made that that only limited debt is available going forward (40% LTV), using 2002 interest rates of 6.60%, and equity return requirements are 13.12%, equity investors still loose the majority of their investments.

	2002	2003	2004	2005	2006	2007	2008	2009 Limited Debt
Debt Underwriting								
LTV (%)	66.09	65.97	67.50	67.98	68.21	69.21	68.66	40.00
Rate	6.60%	5.75%	5.46%	5.53%	5.96%	5.83%	6.25%	6.60%
Amortization	Yes	Yes	Yes	Yes	IO	IO	Yes	Yes
Debt Constant	7.7%	7.0%	6.8%	6.8%	6.0%	5.8%	7.4%	7.7%
Equity Underwriting								
Cap Rates	8.72%	8.72%	8.72%	8.72%	8.72%	8.72%	8.72%	10.9%
NOI ($)	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Value ($)	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890	11,467,890	9,140,768
Pricing and Proceeds								
LT V Proceeds	7,579,128	7,565,367	7,740,826	7,795,872	7,822,248	7,936,927	7,873,853	3,656,307
Levered Equity Required	3,888,761	3,902,523	3,727,064	3,672,018	3,645,642	3,530,963	3,594,037	5,484,461
Debt Service	580,857	529,793	525,090	532,931	466,206	462,723	581,768	280,216
CFADS	419,143	470,207	474,910	467,069	533,794	537,277	418,232	719,784
DSCR	558,659	505,051	540,541	558,659	636,943	689,655	662,252	250,000
Equity Return	**10.78%**	**12.05%**	**12.74%**	**12.72%**	**14.64%**	**15.22%**	**11.64%**	**13.12%**
Cap Rate Adjusment to Arrive at Target Equity Return	**8.72%**	**8.23%**	**8.03%**	**8.04%**	**7.44%**	**7.30%**	**8.40%**	**10.90%**
Adjusted Value	**11,467,890**	**12,153,622**	**12,461,059**	**12,437,811**	**13,449,899**	**13,698,630**	**11,911,852**	**9,174,312**

	2002	2003	2004	2005	2006	2007	2008
% Change to Current (Limited Debt)	**-20.00%**	**-24.51%**	**-26.38%**	**-26.24%**	**-31.79%**	**-33.03%**	**-22.98%**
% EquityRequired (1 - LTV)	**33.91%**	**34.03%**	**32.50%**	**32.02%**	**31.79%**	**30.79%**	**31.34%**
Levered Equity Loss	**-58.98%**	**-58.77%**	**-61.54%**	**-62.46%**	**-62.91%**	**-64.96%**	**-63.82%**
Loan Impairment	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**

In this scenario, the cap rate must approach 11% resulting in a 33% decline in Asset price from the 2007 peak. The underlying loans are not impaired directly, but the equity investors loose between 69% and 65% of their investment. When the opportunity for profit has been eliminated and an investor has lost the majority of their investment, the underlying property is at a much higher risk for default.

Implications

The two Trepp Analysis scenarios are given to illustrate pricing in a totally illiquid environment and an environment with limited liquidity. The reality of the current capital market is probably somewhere in between. The debt origination research by the Mortgage Bankers Association, suggest that the current situation is probably closer to the first scenario than the second. In both scenarios, changes in the cost of capital have a dramatic effect on pricing suggesting that commercial real estate pricing is a byproduct of the cost of capital.

Much ink is spilled over the movement of cap rates and decreases in occupancy and market rents, but there are still groups that believe that there has been a "paradigm shift" in the way commercial real estate is priced, and that "cap rate compression" is a permanent result of the recent bull market. Increased

transparency and reliable and readily available data are credited with reducing some of the uncertainties that required real estate to trade at a cap rate that is higher than 8.5% for many decades.

Leverage, is not a new concept and most practitioners understand that leverage increases the volatility of returns. As the Trepp Analysis illustrated, the equity positions in the scenarios that had high levels of debt were the ones that were most dramatically affected by changes in pricing. But the role of leverage in asset pricing is widely misunderstood by people in and outside of the real estate industry. Actions by the Federal Government are evidence of this lack of understanding. In April, 2004 the Securities and Exchange Commission changed leveraged regulations for five investment banks (Lehman Brothers, Bear Stearns, Merrill Lynch, Goldman Sachs and Morgan Stanley). Since 1975 the SEC had required these investment banks to maintain leverage ratios of 12-to-1 (92.3%) to insure against losses on their investments. The change in 2004, named the net capital rule, allowed the banks to increase their amount of leverage up to 40-to-1 (97.6%). According to Stephan Labaton of the New York Times, the meeting in which the decision was made lasted 55 minutes and the vote to approve the change was unanimous. When the credit crisis hit, the price of the bank's assets plummeted in the same way that the price of the Asset tumbled in the Trepp Analysis. Bear Stearns was sold to JP Morgan Chase, Merrill Lynch was sold to Bank of America, Lehman Brothers filed for bankruptcy protection, and Goldman Sachs and Morgan Stanley were converted to commercial banks.

Leverage continues to shape public policy and is designed to play a major role in the current bailout efforts by the federal government. To address concerns about the current financial crisis the federal government has created a stable of programs designed to stabilize the market using federal funds. On October 3, 2008, the Government enacted the Emergency Economic Stabilization Act of 2008, which authorized the United States Secretary of the Treasury to spend up to $700 billion to purchase distressed assets from the banking system to strengthen bank balance sheets which and was named the Troubled Asset Relief Program (TARP). On November 25, 2008, the US Federal Reserve announced the Term Asset-Backed Securities Loan Facility (TALF) which was originally intended to provide low-cost financing to new issuance of asset backed securities (ASB) including securities collateralized by student loans, auto loans, credit card loans, and loans guaranteed by the Small Business Association (SBA) and was recently amended to allow leverage to purchase existing issuances. The TALF structure involves the Federal Reserve Board to New York (FRBNY) lending up to $1 trillion on a non-recourse basis to holders of AAA-rated backed by newly originated consumer and business loans. On March 23, 2009, the Government announced the Public-Private Investment Program (PPIP) to buy assets from bank's balance sheets. The PPIP is the first program to specifically target commercial real estate.

PPIP

The primary areas of focus for the government's troubled legacy asset programs are residential and commercial mortgages in the form of both whole loans and securitizations that have real estate loans as collateral. The program is designed to help all owners of these assets including those that predominantly hold them in the form of loans, such as banks, and those that hold securities, such as insurers, pension funds, mutual funds and individual retirement accounts. The program is composed of two sub-programs: the Legacy Loans Program and the Legacy Securities Program. The Legacy Loans Program uses an FDIC guarantee of debt financing with equity capital from the private sector and the Treasury to support the purchase of troubled loans from insured depository institutions. The Legacy Securities Program combines financing from the Federal Reserve and the Treasury with equity capital from the private sector to address the problem of troubled securities.

Through the use of leverage, the programs are designed to assist private capital in the pricing and purchasuing of these assets. By co-investing with private capital the government seeks to maximize and protect its return to the taxpayer. [11]

Legacy Loans Program

The program is projected to attract private capital to purchase loan assets from participation banks through FDIC debt guarantees and Treasury equity co-investment. The program is intended to boost private demand for distressed assets that are currently held by banks and facilitate market-priced sales of troubled assets. First the banks identify the loans they would like to sell, the FDIC then holds an auction and an asset pool of loans is purchased by a Public-Private Investment Funds ("PPIF's"). The FDIC oversees the formation, funding and operation of PPIFs that will purchase assets from banks. The FDIC guarantees a debt amount of 6:1 (85.7% leverage), then the Treasury and an equity investor take 50/50 positions in the equity.

Legacy Securities Program

The Legacy Securities Program is aimed at AAA CMBS and RMBS originally rated AAA that was issued before January 1, 2009. Similar to the Legacy Loans Program the Legacy Securities Program is designed to bring private investment to the market through government backed leverage. The Treasury first approves five fund managers to raise capital to invest in pools of securities. The Treasury and private investors would then invest in the asset pools on a 1:1 basis. The Treasury would also provide senior debt in the amount of 50% of the total equity capital in the fund. The senior debt will have the same duration

as the underlying fund and will be repaid on a pro-rata basis as principal repayments or disposition proceeds are realized by the PPIF.

Legacy Loans Analysis

Assumptions	
Original Loan	100
Rate	5.8%
Dividend	5.83
Required equity return	15.0%
Debt	86%
Equity	14%
Equity	13
Cost of Debt	5.0%
Weighted Cost of Capital	6.4%
Total Price ($)	91

The success of the Legacy Loans program is contingent on pricing. The program was put in place to bridge the bid-ask spread between banks and investors and to spark transactions and jumpstart the market. As was observed in the Trepp analysis, pricing is a result of the cost of capital. The government has not given any indication of the cost of the debt they will be issuing and it is not yet clear what returns potential investors will seek to purchase the assets. An analysis of the structure provides a range of results that provide an indication of future pricing. The analysis assumes a loan amount of $100, an interest rate of 5.83%, which is the 2007 interest rate from the Trepp Analysis, a required equity rate of return of 15%, the 6:1 (85.7% LTV) government funded debt, and a 5% cost of debt (interest only). The price for the $100 asset using these assumptions is $91, which equates to a 9.3% discount. These assumptions are a complete guessing game at this point, so a range of pricing based on the cost of debt and equity is given below.

PPIP Legacy Loans Analysis

Equity Returns \ Cost of Debt	1%	2%	3%	4%	5%	6%
12%	219	166	133	112	96	84
13%	208	159	129	108	93	82
14%	197	153	125	105	91	80
15%	188	147	121	103	89	79
16%	179	142	117	100	87	77
17%	171	137	114	98	85	76
18%	164	132	111	95	83	74
19%	157	128	108	93	82	73
20%	151	124	105	91	80	72
21%	145	120	102	89	78	70
22%	140	116	99	87	77	69
23%	135	113	97	85	75	68
24%	131	110	94	83	74	67
25%	127	107	92	81	73	66

The yellow highlighted area indicates prices at which banks would have to take a discount. There is no guarantee that banks would be willing to sell performing loans at any discount at all. In April 2, 2009 the Financial Accounting Standards Board enacted FASB 157-e which relaxes fair-value rules on mark-to-market accounting requirements, allowing banks to keep performing loans on their books for the term of the loan. Typically, banks don not mark illiquid assets like real estate loans to market on a continual basis. Today most banks are holding their performing loans at par. Selling these assets for anything

under par would result in future losses that banks are trying to avoid. It is therefore unlikely that banks will want to sell performing assets for any discount. The analysis above indicates that the cost of debt will need to be extremely low, (below 4%) to incentivize private capital to enter the market.

Both programs are predicated on the use of leverage. In an ironic twist the government is using the same mechanism to solve the problem that created the problem in the first place: abundant low cost capital. Although pricing of the debt has not been announced, it is clear that if the program is going to be successful it will need to include abundant amounts of cheap debt. Doesn't that put us back where we were to start with? Is it possible for the government to be the bank of choice for all of these new investors? Currently the program only extends to December 2009. What happens when the leverage is gone? Will the market then be "stabilized" or is it expected that there will be another "paradigm shift" in valuation? What bank can afford to step into the shoes of the government when the debt expires? The program also assumes that investors are interested in taking equity positions in highly leveraged structures. Based on the current structure private investment will need to participate in a first loss position. This is a risky position to be in. Most investors are still licking their wounds from their last round of investments. There is also significant uncertainty in having the government as a partner. What controls will they exert? What if the private partner starts to make too much money? Is there a possibility that their compensation could be capped retroactively in a scenario similar to the compensation of AIG employees?

Conclusion and Projection

Near term defaults have become a large source of concern amid the illiquidity of the market. Billion of dollars of real estate loans will become due in the next five years. According to Wachovia Capital Markets, LLC, $240 billion of commercial mortgage debt will mature in 2009, $49 billion of which will be in CMBS.[12] This estimate includes $23 billion fixed-rate loans, which are reaching maturity dates and $27 billion floating rate loans which are reaching their first maturity date.

The Trepp Analysis suggests that with the upward shift of cap rates, the potential for future mortgage defaults is high. As a result of the real estate downturn of the late 1980s to early 1990s, commercial mortgage default rates reached extremely high levels throughout the country. The life insurance industry reported the highest outstanding foreclosure rate of 7.53% in the second quarter of 1992 (ACLI), and commercial banks reported the delinquent rate of commercial mortgages as 12.57% in the first quarter of 1991 per the Federal Reserve Board.[3] Not all delinquencies; however, result in foreclosure and sale. In a CMBS structure a "master servicer" is put in place to oversee the administration of the underlying loans

and the distribution of the cash flows to the tranche investors.[4] One of these functions involves the administration and disposition of troubled loans. When a loan in a CMBS deal fails to perform as expected, the master servicer sends the loan to a "special servicer." The special servicer has the power to foreclose on the loan or modify the loan terms in an effort to maximize the cash flows to the CMBS investors.[8] Due to the illiquid nature of commercial real estate, borrowers are unlikely to dispose of the properties quickly to meet the cash payment requirements even if the market value of collateral is higher than the mortgage principal amount.[5]

Loan modifications will be the likely result of near term maturities. If banks choose to foreclose and sell assets they will most likely need to swallow pricing discounts similar to what was shown on the Trepp Analysis (44% from 2007 to 2008). Recent transactions are proving this theory out. In a foreclosure auction in late March of 2009, John Hancock Tower in Boston, Massachusetts, was purchased for $640.5 million. The purchaser paid $20.1 million to acquire the mezzanine debt and assumed the senior debt for a total transaction price of $640.6 million, a 50.7% discount from the 2006 purchase price of $1.3 billion.

The current commercial real estate market is awash in uncertainty. Both investors and sellers are unsure of how to price commercial real estate. An illiquid debt market combined with a suffering economy has created a situation in which all but the most opportunistic investors are avoiding transactions. The Trepp Analysis suggests that cap rates will increase and real estate could sell at prices that are roughly half of their peak pricing. The John Hancock Tower transaction mentioned above provides a real-time example of scenario playing out in the market. Near term maturities may force distressed sales, but special servicers and lenders will most likely choose to extend the terms of performing loans to avoid realizing losses in today's economic environment. The benefits of the PPIP programs are difficult to forecast without knowledge of the cost of the financing that the government will provide. It can be predicted; however, that for the program to work, the cost of financing will need to be inexpensive. This raises a host of questions on the merits of solving a problem created by leverage with the use of leverage. Undoubtedly, leverage helped facilitate the current problem, whether leverage will help solve it remains to be seen. Most likely, commercial real estate pricing will return to pre-2003 levels, a time when debt underwriting was more "conservative" and commercial real estate was trading at cap rates more consistent with the 20-year average. As the Trepp analysis shows, if pricing returns to pre-2003 levels there will be significant losses in the near term.

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